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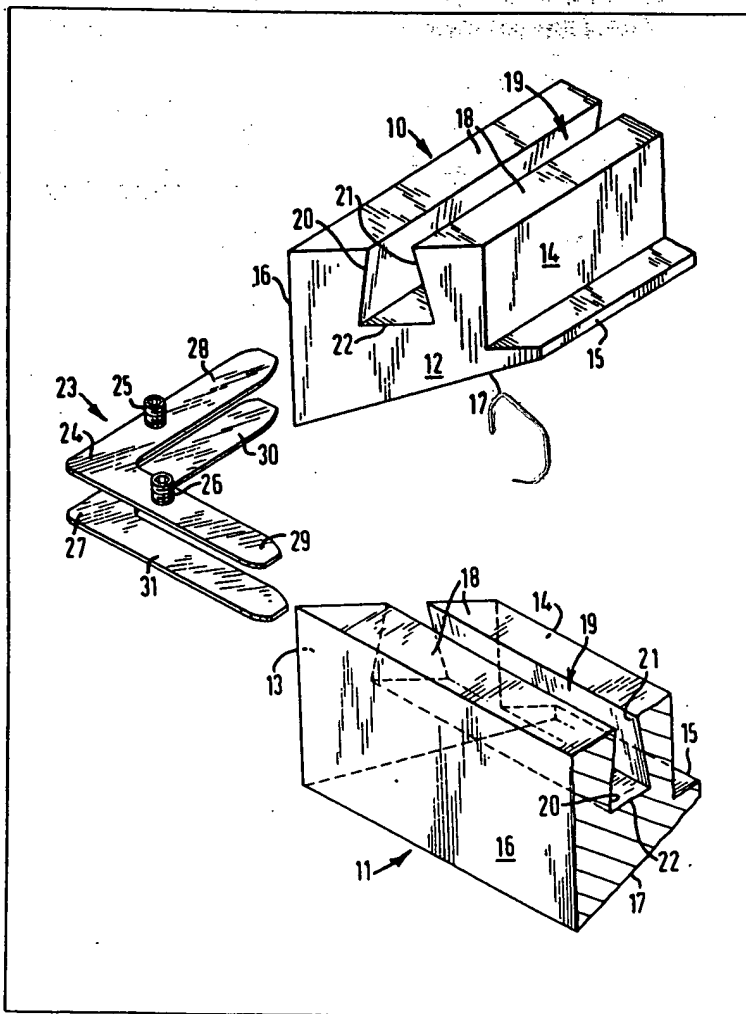
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(54) Picture frames

(57) A picture frame is made from four lengths of picture frame moulding (10, 11) which are of identical cross-section and have their ends mitred in opposite directions to form a rectangular frame. Each length has an inner surface (14) with a bezel (15) for retaining a picture sandwiched between glass and a backing board, and is formed with a longitudinal channel (19) in the face which would be directed towards the wall in use.

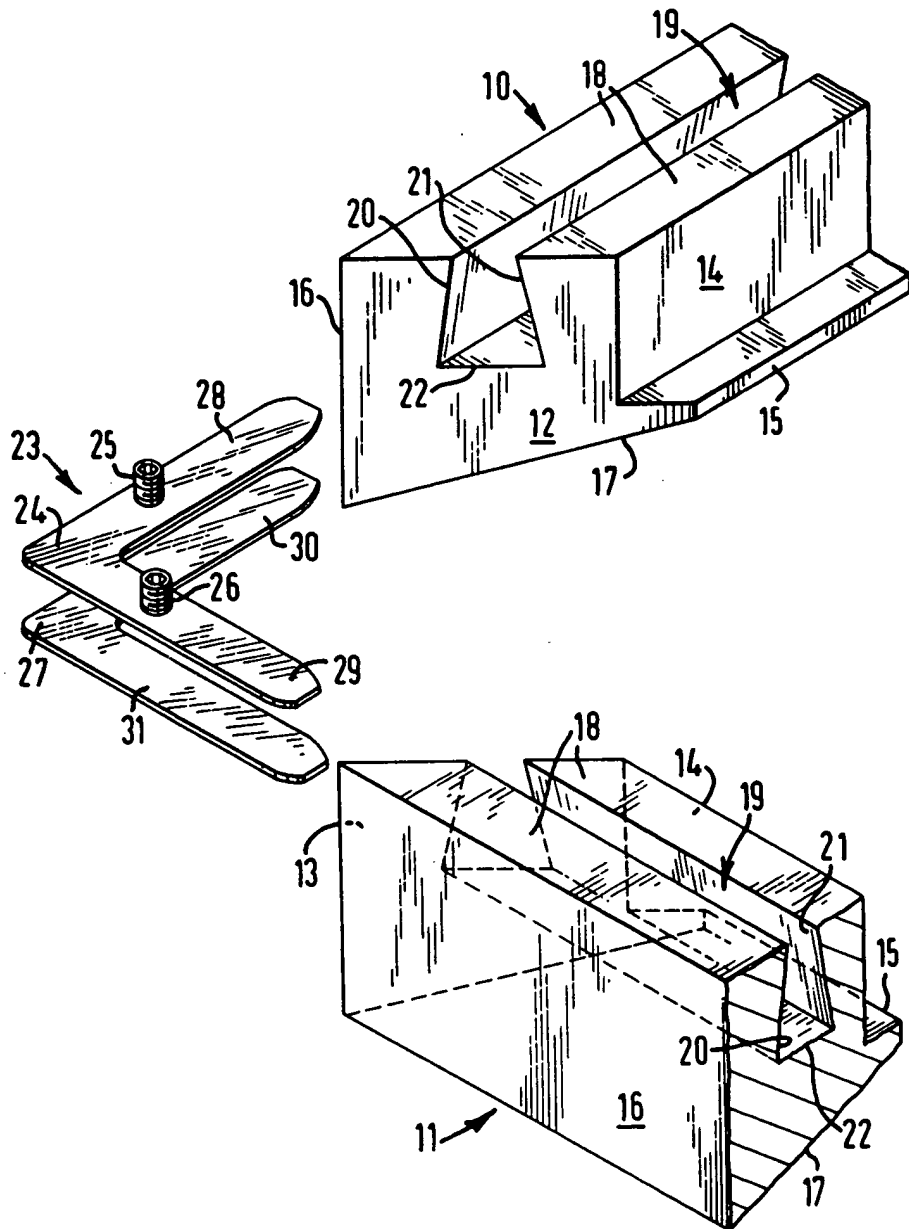
The sides (20, 21) of the channel (19) gradually converge from the bottom (22) towards the wall face (18). The mitred ends (12, 13) are held together by a clamp (23) comprising a pair of generally L-shaped bars (24, 27) which are biased apart by screws (25, 26) operated by a hexagonal key inserted through the open side of the channel (19) so that the bar (27) will be pressed against the bottom of the channel (19) whilst the bar (24) will be pressed into wedging engagement with the converging sides (20, 21) of the channel (19).



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SPECIFICATION

Improvements in or relating to picture frames

This invention relates to the construction of picture frames, to a picture frame moulding for use in such construction, and to the production of this picture frame moulding.

Throughout this specification the term "picture frame" is used generically to embrace any frame which is to contain a picture or any other displayed material such as a photograph, certificate or notice. A picture frame is typically hung from a vertical surface such as a wall and usually comprises an assembly of four picture frame mouldings having their ends mitred and butted together to form a rectangle. Each of these four picture frame mouldings will typically have an inner face forming a bezel for retaining the picture (or other display material) and any protective glass that may be required, an outer face defining the outer periphery of the frame, a forwardly-directed face, and a rearwardly-directed face. The outer and the forwardly-directed faces are usually shaped, patterned and/or coloured to enhance the overall appearance of the picture. However, the rearwardly directed face is usually not visible as it abuts the wall in the case of a wall-hung picture, or is otherwise directed away from the normal direction of view, for instance in the case of a free-standing picture. This rearwardly-directed face is usually plain and, for the sake of convenience, will hereinafter be called "the wall face" irrespective of whether the picture frame is to be wall-mounted or free-standing. Although more ornate types of picture frame moulding are frequently formed from decorated plaster moulded onto a wooden former, the term "picture frame moulding" is used generally throughout this specification and the claims to denote any section from which the sides of a picture frame are cut, irrespective of the manner in which the section was formed.

For many years diverse proposals have been made for securely interconnecting the mitred corners of picture frames to meet the substantial demand for frames which can be transported or stocked as a non-bulky kit that can quickly be assembled by an unskilled purchaser to form a reliably-rigid structure. One previously proposed kit comprises an extruded plastics or aluminium picture frame moulding having an internal longitudinal chamber which is partially closed by a pair of opposed lips that define the wall face of the moulding. These opposed lips also define a longitudinal slot through the wall face, and this slot communicates along its entire length with the internal longitudinal chamber. The mitred ends of the two mouldings forming each corner of the frame are butted together and secured by a clamp comprising a generally L-shaped bar of which the limbs are inserted axially into the two internal longitudinal chambers. A grub screw coacts with a thread formed through each limb of the L-shaped bar and reacts against the bottom of the internal longitudinal chamber to press the L-shaped bar against the under-surface of the two lips. This

known construction is very effective but relies on the high tensile strength and rigidity of the material forming the extruded section. However its usefulness is limited as it is only practicable to form very simple picture frame mouldings as extrusions. Attempts to apply this mode of construction to more ornate picture frame mouldings having a wooden former have proved unsuccessful as the clamps cannot apply sufficient clamping loads without incurring the danger of the opposed lips being split away from the mitred ends of the mouldings. Furthermore, even in those cases where the wood does not split, the clamp tends to work loose as the grub screws bite into the soft wooden surface at the internal longitudinal chamber.

It is an object of this invention to provide a picture frame moulding having a wooden base that can be quickly assembled by an unskilled purchaser to form a reliably rigid structure without incurring the above-mentioned problems.

According to one aspect of the invention, a picture frame moulding has a wall face formed with a longitudinal channel of which the sides gradually converge from the bottom of the channel towards the wall face. The bottom of the longitudinal channel is preferably spaced substantially parallel to the wall face. Preferably both sides of the longitudinal channel are flat and extend from the bottom of the channel to their juncture with the wall face. Although the moulding may be formed from wood with the channel cut into the wall face, this configuration is also satisfactory when the moulding is formed from other materials.

According to another aspect of the invention, a method of manufacturing a picture frame moulding includes cutting a longitudinal channel in the wall face thereof such that the sides of the channel converge from the bottom of the channel towards the wall face. The method may include using a pair of rotary cutters supported for rotation about respectively inclined axes, whereby one cutter will form one side of the channel and the other cutter will form the opposite side of the channel. Alternatively the method may include using a single rotary cutter, moving the moulding longitudinally relative to the cutter to form one side of the channel, then rocking the cutter transversely relative to the moulding, and subsequently moving the moulding again longitudinally relative to the cutter to form the opposite side of the channel. Alternatively the method may include using a single rotary cutter supported for rotation about an inclined axis, moving the moulding longitudinally relative to the cutter to form one side of the channel, turning the moulding through 180 degrees, and then moving the moulding longitudinally relative to the cutter to form the opposite side of the channel.

According to a further aspect of the invention, a picture frame comprises four lengths of such picture frame moulding, each length having both of its ends mitred and butted against the correspondingly mitred ends of two other lengths

side edges of each limb will press against both sides 20, 21 of the respective channel 19. The tendency for each limb 28, 29 to rotate, when pressed between the converging sides 20, 21, is prevented by the leverage exerted by the engagement of the other limb 29, 28 in the other channel 19. The width of the limbs of the second bar 27 is not particularly critical but it is desirably a close fit in the base of the channels 19. In this way the bars 24, 27 jointly serve to increase the rigidity of the mitred corner by resisting any attempt to rotate either length 10 or 11 about the longitudinal axis of the channel. The second bar 27 also prevents the screws from piercing, or possible splitting, the channel bottom 22 and provides a stable surface for the screws to react against. The gradual convergence of the channel sides 20, 21 minimises the undercutting of the wood forming the lengths of picture frame moulding and greatly reduces the danger of the wood being split by the action of the clamps 23.

Although the mode of construction has been devised particularly to enable lengths of wooden picture frame moulding to be clamped together without splitting, it is also very effective with mouldings made from other materials.

When the lengths are formed from wood, it is necessary to form the channel 19 either by using a composite glued structure, or preferably by cutting the channel 19 into the wall face 18. This requires the use of one of the following specially developed techniques:—

A. A pair of rotary cutters are supported for rotation about respectively inclined axes with one cutter positioned in front of the other. In this manner the outer edge of one cutter will form one side of the channel and the opposite outer edge of the other cutter will form the opposite side of the channel. The bottom of the channel is formed by the joint action of both cutters. With this method, the wall face of the moulding is moved longitudinally over the cutters to form the channel in a single pass.

B. The moulding has the channel cut by a single rotary cutter using two passes of the moulding longitudinally over the cutter. The inclined sides 20 and 21 can be generated either by having the cutter mounted for rocking transverse to the feed direction of the moulding whereby the cutter can be rocked to the opposite inclination between the two passes of the moulding, or by having the cutter mounted for rotation about an inclined axis and turning the moulding through 180 degrees between the two passes.

CLAIMS

1. A picture frame moulding having a wall face formed with a longitudinal channel of which the sides gradually converge from the bottom of the channel towards the wall face.

2. A picture frame moulding, according to Claim 1, in which the bottom of the longitudinal channel is spaced substantially parallel to the wall face.

3. A picture frame moulding, according to

Claim 2, in which both sides of the longitudinal channel are flat and extend from the bottom of the channel to their juncture with the wall face.

4. A picture frame moulding, according to any preceding claim, which is formed from wood with the channel cut into the wall face.

5. A picture frame moulding substantially as described with reference to the accompanying drawing.

6. A method of manufacturing a picture frame moulding, including cutting a longitudinal channel in the wall face thereof such that the sides of the channel converge from the bottom of the channel towards the wall face.

7. A method, according to Claim 6, including using a pair of rotary cutters supported for rotation about respectively inclined axes, whereby one cutter will form one side of the channel and the other cutter will form the opposite side of the channel.

8. A method, according to Claim 6, including using a single rotary cutter, moving the moulding longitudinally relatively to the cutter to form one side of the channel, then rocking the cutter transversely relative to the moulding, and subsequently moving the moulding again longitudinally relatively to the cutter to form the opposite side of the channel.

9. A method, according to Claim 6, including using a single rotary cutter supported for rotation about an inclined axis, moving the moulding longitudinally relatively to the cutter to form one side of the channel, turning the moulding through 180 degrees, and then moving the moulding longitudinally relatively to the cutter to form the opposite side of the channel.

10. A picture frame moulding made by the method of any of Claims 6 to 9.

11. A picture frame comprising four lengths of picture frame moulding, according to any of Claims 1 to 5 or 10, each length having both of its ends mitred and butted against the correspondingly mitred ends of two other lengths to form a rectangular frame, each mitred corner of the frame being held together by a clamp comprising a generally L-shaped bar of which one limb has been inserted axially into the longitudinal channel of one of the lengths forming the corner and the other limb has been inserted axially into the longitudinal channel of the other length forming the corner, each limb of the L-shaped bar carries a jacking device which is operable through the open side of the longitudinal channel, and each jacking device reacts against the bottom of the longitudinal channel to press the associated limb of the L-shaped bar into wedging engagement with the converging sides of the longitudinal channel.

12. A picture frame, according to Claim 11, in which each jacking device is positioned substantially in a middle portion of the associated limb of the L-shaped bar.

13. A picture frame, according to Claim 11 or 12, in which each jacking device includes a screw coacting with a thread formed through the